

**DEVICE AND METHOD FOR CALCULATING A RESULT OF A MODULAR
EXPONENTIATION**

ABSTRACT

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In a device for calculating a result of a modular exponentiation, the Chinese Residue Theorem (CRT) is used, wherein two auxiliary exponentiations are calculated using two auxiliary exponents and two sub-moduli. In order to
10 improve the safety of the RSA CRT calculations against cryptographic attacks, a randomization of the auxiliary exponents and/or a change of the sub-moduli are performed. Thus, there is a safe RSA decryption and RSA encryption,
15 respectively, by means of the calculating time efficient Chinese Residue Theorem.